REMARKS

The undersigned wishes to inform the Examiner that the corresponding European Patent Application of which the present application claims priority has been accepted by the European Patent Office.

Claims of the accepted European patent application are attached for the Examiner's attention as Appendix 1.

The applicant wishes to reiterate again the essential features of the invention which make it patentable over the prior art.

(I)   <u>The invention is based on solar energy to produce wood by removing CO_2 from the atmosphere, converting the thus produced wood into charcoal and retrievably storing the charcoal in subterraneous or aboveground facilities. Thereby, a first reduction of atmospheric CO_2 is achieved.</u>

As explained in CIP page 10, lines 20-26, with respect to Example 2, an annular harvest of 13.2 million tons of wood will result in the production of 4.62 million tons charcoal containing 3.93 million tons of carbon and which are stored and constitute the equivalent of 14.4 million tons of CO_2 which are thus removed from the atmosphere.

(II)   <u>Only a fraction of the charcoal is retrieved for conversion into an energy carrier which does not produced CO_2 upon combustion, specifically hydrogen.</u>

As further explained on CIP pages 11-13 with reference to Example 3, a fraction of the stored carbon such as 10% = 0.393 million tons is retrieved and reacted to produce hydrogen in accordance with reactions (1) and (2). In such process, 16.4% of the stored and retrieved carbon are consumed to generate the heat required for reaction (1), namely 0.0645 million tons are consumed and produce 0.237 million tons of CO_2 by combustion. The 0.237 million tons CO_2 are reemitted into the atmosphere while 0.329 million tons of carbon remain available for hydrogen production.

(III)   By replacing conventional carbon-containing energy sources with hydrogen, which is much more energetic than the conventional carbon-containing energy carriers, a given weight of hydrogen replaces a multiple amount of carbon-containing energy carriers. Thus, the combustion of the conventional carbon-containing energy carriers is avoided and a further reduction of atmospheric CO_2 is achieved.

According to the stoichiometry of reactions (1) and (2) in Example 3 of the current continuation-in-part application, 12 t of carbon react with water to form 4 t of hydrogen and 44 t of CO_2. Accordingly, 0.329 million tons of the available carbon will react with water to form 0.11 million tons of hydrogen and 1.21 million tons CO_2. Thus, a total of 1.45 million tons CO_2 are formed in reactions (1) and (2) and are re-emitted into the atmosphere so that, so far, only 14.4 – 1.45 t = 12.95 million tons of CO_2 will be removed from the atmosphere by the aforementioned processes.

Considering the combustion of hydrogen for energy generation, only water is formed which affects neither the environment nor the atmospheric CO_2 level. The heat generated upon combustion of 1 m^3 of hydrogen amounts to 145.6 . 1 mol or 2 g of hydrogen assume a volume of 22.4 1 under standard conditions (Avogadro's Law). Thus, 1 m^3 of hydrogen contains 44.6 mols or 89.2 g of hydrogen which, upon combustion, produce 145.6 MJ of heat energy. The heat energy generated by the combustion of 1 kg of hydrogen which is equal to 89.2 x 11.2 g of hydrogen thus amounts to 1630 MJ.

As a matter of comparison, the heat energy generated by the combustion of 1 kg of carbonaceous motor fuel amounts to 46 MJ/kg. Taking the hydrocarbon octane as an example of motor fuel, the chemical composition of octane is C_8H_{18} and the molecular weight is 114. Octane thus is composed of 16% hydrogen and 84% carbon. Consequently, the combustion of 1 kg of octane will generate 3.08 kg CO_2.

In order to generate the same amount of combustion energy as 1 kg of hydrogen, i.e. 1630 MJ, 35.4 kg octane would be required. 35.4 kg octane contains 29.7 kg carbon which, upon combustion, will generate 109 kg CO_2.
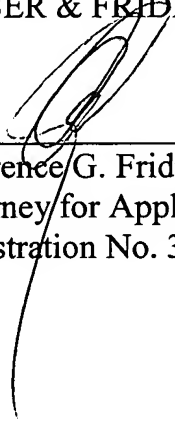
According to Example 3, as explained hereinabove, 0.11 million tons of hydrogen are available from reactions (1) and (2 and generate, upon combustion,

179,300 mill MJ without any CO_2 emission. This amount of energy would be available from combustion of 3.9 million tons of octane, however, only in conjunction with the emission of 12 million tons of CO_2.

Consequently, substitution of the carbon-containing fuel octane with hydrogen not only abolishes the use of the fossil fuel octane, but additionally will reduce the CO_2 emission to the atmosphere by 12 million tons per year, which will add to the reduction of the atmospheric CO_2 level by the 12.95 million tons per year due to the charcoal production and storage. In summary, the invention will annularly reduce the atmospheric CO_2 level by 24.95 million tons.

Respectfully submitted,

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